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The Use of Host Nation Support as an Alternative to Deployment of Theater Medical Facilities (Southwest Asia)

Colonel
Arthur W. Hapner
U.S. Army

Faculty Research Advisor
Colonel Albert J. Sierra, USA

The Industrial College of the Armed Forces
National Defense University
Fort McNair, Washington, D.C. 20319-6000

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THE USE OF HOST NATION SUPPORT AS AN ALTERNATIVE TO DEPLOYMENT OF THEATER MEDICAL FACILITIES [SOUTHWEST ASIA]

ABSTRACT

Objective of the Study. The objective of the research paper--The Use of Host Nation Support as an Alternative to Deployment of Theater Medical Facilities [Southwest Asia]--is to determine the feasibility of using host nation support facilities and medical support as a component of theater medical forces.

Specific Focus. The Army force structure community continues to address the executive decision: REDUCTION; the Army Medical Department consists of a large portion of the Army structure. I believe host nation support (an old concept) is one way of off-setting medical force structure. Force structure in this study is very broad; its definition encompasses dollars, personnel, equipment, transportation and material.

Concepts to explore. Four initial questions cover the genesis of the problem: What is host nation support in the context of this region? What criteria is used to develop standards for acceptable health care in peace and/or conflict? Are the countries of the region receptive to the host nation support concept? What can we glean from the experiences of: Desert Shield/Storm?

Approach. I pursued the following in conduct of this research project:

1. Reviewed available literature.
2. Conducted interviews with OTSG staff, medical planners, DA Operations (Host Nation Division), Academy of Health Sciences.
3. Reviewed selected countries: culture, political views, facilities, current host nation support agreements.
4. Performed the analysis.
5. Developed the conclusion.

Anticipated conclusion. The hypothesis is: Host nation support is a viable alternative to deployment of medical facilities and to off-set medical force structure. However, the research and analysis provided results counter to the hypothesis. Many nations in this region--due to cultural and political reasons--oppose entering into such agreements. The majority of the nations surveyed are unable to provide the quality personnel or facilities to meet US standards of medical care.

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DISCLAIMER

THE USE OF HOST NATION SUPPORT AS AN ALTERNATIVE TO DEPLOYMENT OF THEATER MEDICAL FACILITIES [SOUTHWEST ASIA]

INTRODUCTION

In his prepared statement to the Senate Armed Services Committee, January 31, 1992, General Colin L. Powell sets the tone for the future of the Armed Forces:

> "...the size of our military structure to bring us down to what we have called the base force--the right size force needed to deal with the new geopolitical situation as it has evolved to date and as we expect it to evolve in the future....**The growing uncertainty of the international security environment makes it increasingly difficult to predict and estimate the circumstances under which U.S. military power might be employed.** Therefore, we have shifted our planning focus from a single monolithic global scenario to an array of regional scenarios--similar to the type we experience in confronting Iraq in the gulf."[1]

The military experiences of the Persian Gulf War (Operation Desert Shield/Desert Storm) and the emphasis of Congress (and the new Administration) to reduce the size of our military force drive us to re-evaluate our capabilities in the combat service support arena. Various questions arise:

* **Are there other ways to provide our deployed service personnel with medical support?**
* **What standard of care are we willing to accept?**
* **Can the countries of Southwest Asia (SWA) provide this standard of support?**

* Is Host Nation Support (HNS) an alternative?

In answering the above questions the Middle East, Southwest Asia, region "has its own unique set of political, economic, and military challenges."[2]

The United States, "since the Persian Gulf war, has sought expanded defense arrangements with the Gulf States that will address the security needs of the region. The primary objectives of these arrangements are to deter future aggression in the region and, if deterrence fails, to be in a better position to respond to a crisis than we were in August 1990."[3]

An analysis of the Gulf States' character (culture, religion, demographics, living conditions, etc.), a review of their health care standards, and a look at their ability to provide the medical support are the criteria for determining the desirability of host nation support in this area. The countries of this study are:

Bahrain	Jordan	Oman	Syria
Egypt	Kuwait	Qatar	United Arab Emirates
Israel	Lebanon	Saudi Arabia	Yemen

BACKGROUND

STRATEGY, DIRECTIVES, GUIDANCE.

The National Security Strategy, National Military Strategy and Defense Planning Guidance provide the general statements for

establishing broad guidance to the services in planning force structure and deployment of forces. The regional scenario has replaced the global emphasis in the planning and execution of operations.

The Defense Planning Guidance defines regional areas of interest and service specific objectives. However, due to the classified nature of this document, the National Security Strategy and National Military Strategy are the prime sources of reference.

National Security Strategy.

> "In the Middle East and Southwest Asia, we will maintain forces deployed in the region, expand our bilateral defense arrangements, preposition materiel and equipment, and conduct joint and combined exercises to defend the sovereignty, independence and territorial integrity of our partners in the region. We will continue to work to assure access to oil, deter recourse to war, terrorism, and subversion, and enforce UN Security Council resolutions."[4]

National Military Strategy.

> "...As we draw down our permanently stationed forces overseas, it becomes even more important to preserve access agreements and basing rights which prove so vital to responding to crises overseas."[5]

These two statements underscore the need for the United States to look for ways of improving relations, insuring regional stability, and preparing for future conflicts. The services foster Host Nation Support agreements as instruments to assist in meeting the requirements.

HOST NATION SUPPORT.

Host Nation Support takes many forms: written agreements, handshakes, and verbal agreements. The ideal form is a written agreement, as was the basis of our support to NATO. With a written agreement, the countries involved develop precise plans utilizing these agreements to offset forces, costs and resources. Handshakes and verbal agreements are much less desirable to planners and force developers, yet are valuable. As our experiences during Desert Shield/Storm demonstrated, these types of agreements were very useful in establishing logistical, medical and transportation support.

The combatant commander has the responsibility and authority to enter into negotiations with countries in time of conflict. This authority is invested to him through the Joint Staff, Office of the Secretary of Defense and Department of State channels.[6] These negotiations during time of conflict have a major drawback--the commander in developing his force is **unable to plan this support**, until after he arrives in the area of operations.

A critical aspect of warfighting capability is the logistical chain. One means to insure logistical resources are available is through Host Nation Support.

> "Combatant commanders and Service Component commanders contemplating war and operations in undeveloped theaters of operations must give adequate consideration to pre-positioning....Commanders should give serious consideration to the availability, capability, state of

> organization, and limitations of CS/CSS forces allocated to them for wartime operations.... This is especially critical when US CS/CSS force structure has been reduced in anticipation of the available HNS assets. This should include an analysis of established agreements with foreign nations."[7]

The logistical tail is costly to develop, train, maintain and sustain. It is a vital component in the ability of the combatant commander to pursue his objectives. He designs his force to meet specific objectives. The design of the medical forces to support the objectives is just as critical.

MEDICAL FORCE DESIGN.

Persian Gulf War. The experiences of the Persian Gulf War establish the start point for designing the force structure to support the Southwest/Middle East region. Through collective agreements and cooperation, the Coalition forces succeeded in meeting their objectives. The United States provided the medical forces to support its own forces and the Coalition provided medical forces to support the other military forces during the operation. Host Nation Support played a minor role in this medical support for the United States and Coalition forces.

Understanding the level of support requirements, the need for good facilities and quality professional personnel in the medical service arena is best demonstrated by a brief review of how Operational Military Medicine operates during conflict.

Additionally, a brief look at our experiences during Desert Shield/Storm will enhance our understanding and future focus.

Operational Military Medicine. The manner in which we organize our medical forces impacts on the quality of care. The military health care system has a duel mission--peacetime health care and medical readiness. In our push to improve day-to-day operations we must continue to prepare and maintain our medical readiness.[8]

Medical readiness equates to trained medical forces prepared for worldwide deployment in support of the combat effort. Doctrinally, the medical force is designed in four echelons, or tiers, within the Theater of Operations. Of the tiers described below, echelon three and four are targets for Host Nation Support:

> "First Tier. The first tier is emergency care, buddy aid, or the application of basic life-saving measures. This level of care is at the point of injury; in the Army at the battalion aid station. Those requiring more definitive care are evacuated to the next tier.
>
> "Second Tier. At the second echelon, resuscitative care and initial surgery as required to save life or limb are performed at facilities such as the air transportable hospitals of the Air Force, aid stations of the Marine Corps, and at medical companies of the Army. At these locations patients who may be returned to duty in a few days are retained; those requiring more extensive or complicated care are evacuated to the next level.
>
> "Third Tier. Medical facilities staffed and equipped for surgery and post-operative care are operated at the third tier. These facilities may provide additional surgical specialty care as well as laboratory and radiology support. Two Hospital ships also have medical capabilities at this third echelon of care.

> "Fourth Tier. The fourth echelon provides medical care in a facility staffed and equipped for follow-up surgery and rehabilitative therapy for patients in a recovery phase who are expected to return to duty in a limited amount of time. Patients not expected to return to duty shortly are further stabilized for evacuation out of the theater."[9]

Desert Shield/Storm Experience. The experiences we gained during this operation were very valuable. We expanded our knowledge and understanding of the Arab culture and enhanced our ability to negotiate future agreements. Medical support was broad and comprehensive, using the full spectrum of support from organic forces to Host Nation Support--

> "Operation DESERT SHIELD/STORM was supported by medical organizations in U.S. Central Command, U.S. European Command, Pacific Command, and CONUS. The medical system was tailored throughout to meet the commands' needs based on the number of troops in the theater and the estimates of casualties expected for various types of combat operations. As the mission of the deployed forces evolved from deterrence to offensive operations, the medical support requirements expanded. Deployment of medical units began on August 8, 1990, and units from all Services were involved. In addition, beds were provided by the U.S. European Command and through host-nation support agreements with Saudi Arabia, Bahrain, United Arab Emirates, Qatar, and Oman...."[10]

FACILITY CRITERIA

As we look at the need for Host Nation Support for future conflicts in this region, we must establish the criteria or standards with which we will gauge the facilities and support desired. The starting point for developing this criteria is the end point of our

experiences in Desert Shield/Storm. Colonel Robert P. Belihar, Central Command Surgeon stated:[11]

> "When we looked at the host nation support early on, we knew we would have to look at host nation capability, because obviously you either had the organic support that went with the units when the units were deployed--we had some equipment repositioned--or you had host nation capability."[12]
>
> "About two years ago when we looked at the area of responsibility and how we would support medically, the decision was made by the ArCent commander that we would use HNS to meet our echelon-above-corps requirements. So we immediately started to gather, made a much more aggressive effort to gather information about what facilities were available in each country, what those capabilities were."[13]
>
> "We had the opportunity of visiting many hospitals throughout the Middle East, and when we selected hospital sites for our folks to go in and use those facilities, we evaluated what their capabilities were, OR capability, ER's, just overall capability... We wanted hospitals that were in the 400-bed range and larger."[14]

The guidelines [double underlined above quotes] are the basic criteria for considering Host Nation Support facilities.

WHY PURSUE HOST NATION SUPPORT?

The National Military Strategy guidelines do not provide the only reason to pursue Host Nation Support. The physical structure--size, weight, cube--of the military hospitals (Deployable Medical Systems (DEPMEDS)) draws us to this pursuit. The maintenance, sustainment and movement of these facilities are costly.

The DEPMEDS facilities provide us with minimal standards in relation to: physical plant, utility requirements, fixed medical and non-medical equipment, safety and security for patients, accessibility to heliports, airfields and roads. Our DEPMEDS facilities are constructed in modular units with standard medical and non-medical equipment. The state of the art facilities are mobile, allowing them to be established near major airfields and roads. However, the major drawback of the facilities is their size and bulk in terms of transportation requirements. "Distance and the need to move heavy DEPMEDS sets were the major medical challenges during the Mobilization."[15] Further, guidance established in Joint documents drives us to look towards HNS:

> "The level of assistance in terms of transportation resources, labor, facilities, and materiel that can be provided by allied nations affects the amount of airlift and sealift that may be devoted to initial movement of combat forces or sustainment."[16]

The two hospitals utilized in the echelon-above-corps (tier three and four) are the Field Hospital and General Hospital. The Field Hospital requires five C5A or fourteen C141 aircraft for strategic deployment; while the General Hospital requires seven C5A or twenty-nine C141 aircraft.[17] Table 1, page 10, Total Weight and Cube MF2K Hospital, depicts the requirements to move these two type hospitals by sealift.

The magnitude of the strategic airlift or sealift requirements for moving a single hospital drives us to look for alternatives--IF

AVAILABLE. Ideally, Host Nation Support (HNS) of medical services would reduce the requirements in force structure (medical, engineers, security, etc.), equipment, and transportation. However, the quality, availability, and reliability of care provided our soldiers are just as important in the overall consideration in force planning. The next section establishes the quality of care to be provided our soldiers.

TOTAL WEIGHT AND CUBE MF2K HOSPITALS[18]

	WEIGHT (LBS IN THOUSANDS)			CUBE (CU FT)		
HOSP	TOE	CTA	TOTAL	TOE	CTA	TOTAL
FIELD	1,111	226	1,337	142,000	25,000	167,000
GENERAL	1,743	289	2,032	259,000	31,000	290,000

Table 1.

QUALITY OF CARE STANDARDS

The American citizen and the fighting soldier in peacetime receive the highest quality of treatment based on national accreditation standards. These same treatment protocols are translated in time of war with the quality of care provided in DEPMEDS facilities and the excellent training of the professional medical staffs. This

expectation--to meet highest standards of care--was highlighted by the Army Surgeon General during Operation Desert Shield/Storm:

> "The problem is two fold: many [civilians and military leaders] are not familiar with military medicine and this lack of understanding leads to the expectation to have a civilian trauma center on the battlefield."[19]
>
> Dr. Frank Ledford further relates: "Perhaps the most 'infamous' allegation made on '*Nightline*' concerning DEPMEDS equipment was that the Army had supplied them with x-ray machines that were dangerously out-of-date....These machines were produced between 1947-1986. These machines take very good x-rays, and the technicians and doctors like them. They do not have fluoroscopic capability though and they're not as powerful as the units we replaced them with."[20]

Medical facilities and equipment must be the best we can provide within the constraints the government places on our procurement. The military has the capability to provided the expected care by procuring the DEPMEDS systems.

The professional medical staff of the military is among the best trained and educated in the world. Lack of staffing, except in extreme circumstances, was not a problem during Desert Shield/Storm. US standards of professional care is the basis to compare the quality of care in other countries. The level of medical services of the subject countries should be equal to the US standards.

The challenge of this report is to determine if the countries in question are capable of and willing to provide the quality of medical support in the event of national emergency or conflict.

The standards of evaluation are:

* **Facilities: meet US standards for equipment, availability of beds, infrastructure, sanitary conditions (DEPMEDS standards);**

* **Quality of Care: Professional medical staff trained to US or Western standards; capable providing care at same the level as US professionals; availability of trained staff;**

* **Other: Ability to provide support: economic capability, willingness to support.**

MIDDLE EAST (SOUTHWEST ASIA) REGIONAL ANALYSIS

In this section the Middle East countries of Bahrain, Egypt, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates (UAE), and Yemen are reviewed. They were selected due to their past support, alliances, and our strategic interest in the area. The analysis considered their cultural and religious aspects, living conditions and terrain, national health systems and health of the nation, ability to support, and willingness to support or enter into agreements. The final determination is compared against the previously established criteria.

GENERAL REGIONAL ASPECTS.

Culture and Religious Aspects.

The population of the region is predominantly Islamic (except Israel). "The rules of Islam guide many aspects of life in Persian

Gulf States. Regulations regarding food, dress, and behavior have the greatest impact on women. For instance, **purdah**, the isolation of women within the home, limits routine access to medical services or health care programs unless the care is provided by women. Even when such care is available, non-emergency gynecological services commonly are denied to women in public clinics, if male family members protest. Until recently, religious and cultural beliefs prohibited women from entering the nursing profession."[21] The relaxation of this Islamic rule varies in each country.

In this culture the family is the center of gravity. The individual respects government and leadership, however the primary loyalty is within the family, the position it represents and its ties to the social morals. Throughout this culture the male is the dominant figure, the family is no exception.[22]

On a radio interview with Past-Secretary of Defense Cheney, 18 February 1993, G. Gordon Liddy posed the question of increased Islamic fundamentalism in the region. "The Islamic fundamentalism movement has the tenet to take care of the Friday worshipers (Israel) and then the Sunday members (Christians). What are your views to the threat in the region?" Mr. Cheney stated that the rise of this attitude will have a major affect on our ability to influence the people and governments of this region. As the popular movement takes hold in countries such as Saudi Arabia,

Egypt and Oman (our friends), the governments will be less likely to enter into joint agreements.[23]

"Cultural and religious sensitivities of Islamic patients and host nation health care providers pose initial obstacles to effective management of casualties and patient care."[24] This is observed in the extreme views of individual sects such as: the dependence on local "medicine men" and the lack of individuals seeking quality health care (except the male member). The people exhibit an inherent disregard and understanding of medical care. This attitude impacts on the quality of care provided in this region.

Largely due to cultural and religious reasons, the Middle East region relies heavily on foreign support for health care. These aspects impact heavily on the countries' training of medical professional staffs. Few indigenous personnel enter the health care profession, except as physicians. Nurses are primarily expatriates.[25]

Terrain and Climate.

The following are general comments about the countries of the region which are of significance.

> "The prevailing desert climate (hot, dry, and sandy) and terrain of the Persian Gulf States pose significant threats to personnel and medical materiel, and can be expected to hamper medical operations in the region."[26]

* "Helicopters are recommended for medical evacuations conducted outside of urban areas."[27]

* "Because land generally is barren and sparsely inhabited, most health care facilities and services are located in urban areas, with limited outreach to rural sites."[28]

* "Degradation of medical materiel (drugs, blood, etc.) maybe accelerated by climatic variations of hot-dry and warm-wet environment."[29]

"Lack of fresh water sources in the region has limited the prevalence of disease vectors which otherwise might become factors in the hot, humid climate. Development of water supplies and sanitation systems to make up for the lack of fresh water has been inadequate."[30]

* "Water supplies are tenuous throughout Arabian peninsula. There are no perennial streams. Water is obtained from wells and increasingly, the sea. Saudi Arabia and other countries in the region have established desalination capability. Primary source is the sea."[31]

In general, the terrain is mountainous or barren desert. The road systems are not well developed or in poor condition (except in Israel and Saudi Arabia.) There are few airfields capable of utilization by heavy aircraft. The sea ports are adequate for general shipping, however, most are small to US standards. Annex A provides a graph depicting the size of the countries in square kilometers.[32]

The climate has a major impact on travel, living conditions, equipment utilization and sustainment. Due to the lack of open water sources, the incidence of disease is relatively low.[33]

Living Conditions.

The standard of living of a country is measured by many factors: Gross National Product (GNP), percentage growth in GNP, population size, population density, urbanization, and average population growth. The health of the nation is viewed through its life expectancy, death rates, hospital capacity, available professional medical personnel. Annexes B through J provide charts which reflect a comparison of regional countries in relation to the United States.[34]

Gross National Product and Percentage of Growth. The Gross National Product (1991 dollars) of the nations range from a low in Lebanon ($1,836,000) to a high in Saudi Arabia ($86,070,000.) In comparison the United States GNP is $5,400,478,000. The percentage of growth (1990 to 1991) ranges from a low in Qatar of -5.8% to a high in Oman of 11.7%. The United States is 3.1%.

Population and Urbanization. The population of each country varies from the least populated, Qatar (518, 000), to the most populated, Egypt (54,452,000). Population in itself is not an indicator of living style or a determinate of problems. Linking the growth rate, the percentage of urbanization, population density, and the size of the country reflect possible problem areas: reduced standard of living, congestion, sanitation, and health. The charts in Annex B to C provide the basis of the comparison.

COMPARISON OF KEY POPULATION FACTORS[35]

COUNTRY	*POPULATION DENSITY (per sq kilom)*	*AVERAGE ANNUAL GROWTH RATE (% '90 to '91)*	*URBANIZATION (% in urban)*
BAHRAIN	*866*	*3.2*	*81*
EGYPT	*54*	*2.3*	*45*
ISRAEL	*216*	*1.5*	*90*
JORDAN	*37*	*4.2*	*70*
KUWAIT	*124*	*3.6*	*94*
LEBANON	*325*	*1.4*	*80*
OMAN	*7*	*3.5*	*9*
QATAR	*47*	*5.3*	*88*
SAUDI ARABIA	*8*	*4.2*	*73*
SYRIA	*181*	*3.8*	*50*
UAE	*29*	*5.7*	*78*
YEMEN	*19*	*3.2*	*25*
UNITED STATES	*27*	*0.8*	*74*

TABLE 2

Table 2, above, Comparison of Key Population Factors, represents the comparison of the three key factors. The regional average annual growth rate is 3.5. This indicator poses various questions:

How will the governments of the region support the infrastructure to maintain this growth? Will overcrowding and standards of living be major problems?

The growth rate coupled with the urbanization factor (except for Oman and Yemen) signals the possibility of major problems with sanitation, health, and housing. A positive factor attributed to urbanization is that there is no geographic barriers restricting access to health care. However, the high rate of growth will have a negative impact on an already heavily taxed health care system.[36]

Health Care Systems. The health care systems of this region are predominately government operated and/or controlled. A key factor to the quality of health care systems is the ability to purchase the service. During the past decade, countries like Kuwait, Oman, Bahrain, and Saudi Arabia have spent considerable funds to import or buy the needed health care. The impact of the world oil market has caused a down turn in this trend. As the Gross National Products of the countries stabilize or decline, the governments are reassessing the dollars spent on health care.[37] The following statement provides an excellent summary of the state of the systems:

> "Extremely poor sanitary conditions, inadequately trained personnel, critical shortages of medical materiel and personnel, unreliable laboratory services, outdated medical facilities and equipment, and insufficient dietary services are deficiencies common to most governmental and military hospitals in region."[38]

There are some exceptions: (1) Israel and Saudi Arabia have placed great emphasis in the past decade to develop high quality systems that support the current needs of population. (2) Kuwait is in the rebuilding stages after the Persian Gulf War.

INDIVIDUAL COUNTRY CAPABILITIES SUMMARIES

This section contains extracts of the Medical Capabilities Study for each country studied. The studies are classified, however, only unclassified information is cited. The extracted information covers the areas of: living conditions, sanitation, state of health care, their support of Desert Shield/Storm, and likelihood of entering into Host Nation Support Agreements. Note: Statistical data and the US standards for evaluation are extracted from the charts in the Annexes E to J. **[Note: ratios cited in the text are: # of (physicians or nurses or beds, etc.) per population]**

BAHRAIN, KUWAIT, QATAR, UNITED ARAB EMIRATES.[39]

These four countries were joined together in one volume. Statements represent all, unless noted by exception.

The region is densely populated, ranging from a low of 29 individuals per square kilometer in the UAE to a high of 866 individuals per square kilometer in Bahrain. The average urbanization factor is 82% for the Persian Gulf States. Standard of living is relatively moderate in the urban areas, while the

rural areas exhibit a low standard of living. Most of the population has access to clean water and adequate sanitation except for UAE. There is an extreme water shortage in rural area.

The health care system is government operated and augmented with private medical organizations. It is heavily dependent on foreign (expatriate) personnel for a large portion of personnel resources. Respectively, the physician and nurse to population ratio are: Bahrain: 1:1037, 1:468; Kuwait: 1:760, 1:226; Qatar: 1:779; 1:365; and UAE: 1:1012, 1:392. They import the majority of their medical equipment and supplies. The countries are heavily dependent on foreign assistance (except for Kuwait) in the event of natural disasters, national emergency or conflict. **The health care facilities are limited and except for a few in Kuwait, <u>not up to US standards</u>.** The bed to population ratios are: Bahrain--1/333; Kuwait--1/359; Qatar--1/485; and UAE--1/411.

The countries supported Desert Shield/Storm in the following manner:

> "Bahrain-- "Shared" Salmaniya and Bahrain Defence Force Hospital (350 beds for US use); unit level medical support to own deployed forces.
>
> "Kuwait: Unit level medical support of one deployed brigade.
>
> "Qatar: unit level medical support of deployed combat unit; 150 beds at Al Hamad Hospital, Doha, made available to US.
>
> "UAE: unit level medical support of deployed unit; Shared hospitals in Abu Dhabi and Dubai totaling 800 beds."[40]

The HNS medical support during Desert Shield was orchestrated upon arrival. The United States has entered into HNS agreements (non-medical) with Bahrain, Kuwait, and UAE. The governments are not willing to enter into extensive written agreements. They do indicate they will provide medical support when the need arises. Bahrain is supporting prepositioning of DEPMEDS hospitals.

EGYPT[41]

Egypt is the most populated country in the region (54,452,000). It is predominately Islamic. Its density and urbanization rates are low in comparison to other countries of the region, 54% and 45%, respectively. The economic recession, due to the collapse of the world oil prices in 1986, had a negative impact on living conditions. The sewer system services 70% of the urban population, but is in poor state of repair. Dumping of solid waste and sanitation are growing problems. Potable water is available to 91% of urban population. Rural areas have very poor sanitary conditions and potable water servicing only 33%. This is caused by poor domestic living conditions: "animals living inside or in close proximity to homes; animal waste from cows, buffalo, and other domestic draft animals is collected and used as fuel; rural water supply is polluted by human waste."[42]

The government run health care system is overburdened. The emergency services are barely capable of providing stabilization of critically ill or injured. The shortage of medical personnel is

noted in physician and nursing to population ratios: 1/743 and 1/1584, respectively. The nursing profession is held in very low esteem. Medical education and training of physicians and nurses is of very low quality in Egypt. The major deficiencies of the hospitals are: "extremely poor sanitation conditions, inadequately trained personnel, critical shortages of medical materiel and personnel, unreliable laboratory services, outdated medical facilities and equipment, and insufficient dietary services."[43] The bed per population ratio is 1/576. Few of the facilities are recommended for providing health care to US personnel. Helicopter and fixed-wing aircraft are the primary medical evacuation methods between rural and urban areas of Egypt. A cultural note that impacts health care:

> "Egyptians have strong belief in predestination with regard to outcome of illness. Failure to cure is viewed as will of ALLAH."[44]

Availability of dollars is a major obstacle to improved health care. The Egyptians rely heavy on foreign assistance to provide medical care in national emergencies and crisis.

The Egyptian support for Desert Shield/Storm consisted of unit level medical support of two deployed divisions and one 200 bed Field Hospital at echelon above division.[45]

The Egyptian health care system does not meet US standards for quality of care and sanitation. Its ability to support its own population raises questions to its availability in time of

conflict. HNS agreements of a medical nature are not desirable. Other logistical agreements may be likely, but medical facilities do not meet US standards.

ISRAEL[46]

The population of Israel is 4,477,000. It has a low growth rate of 1.5%, however, this figure does not reflect emigration projections from the former communist countries. The growth in GNP is equal to the US at a plus 3.2%. The living standards are among the highest in the Middle East. The rate of urbanization is one of the highest in the region at 90%. The government has developed an infrastructure for sanitation services which is equal to western standards. However, this could become a problem with expanded population. Water is readily available, though heavily treated. Air pollution is a problem in the industrial areas.

The government controlled health care system employs 6% of the population. There are no cultural or religious factors which negatively affect health care or individuals entering the medical profession. The physicians are trained to western standards and the physician to population ratio of 1/376 indicates no shortage compared to the US standard of 1/412. Israel is experiencing slight shortages of nurses based on the ration of 1/376. The hospitals are comparable with western Europe and US standards: clean, well-stocked, with state-of-the-art equipment. They are not over crowded. This is based on the bed to population ratio

of 1/163 compared to the US of 1/197. The country is relatively self-sufficient in producing medical materiel (drugs, biological supplies, etc.). However, equipment is mostly imported of Western or Japanese origin. The emergency medical services are experienced, well trained and support the countries needs. Evacuation by helicopter is necessary due to terrain. Israel is one of the only countries in the region which can support its own medical needs.

Israel's support for Desert Shield/Storm is classified.

Israel is our strongest ally in the region. The political situation may hinder the establishment of medical HNS agreements. The ability of this country to medically support itself is a positive factor.

JORDAN[47]

The population of Jordan is 3,413,000 with a rate of urbanization at 70%. The country's GNP is relatively low compared to the other countries of the region. The living conditions are poor. Potable water supply and waste disposal systems are major problems for the country.

The health care system is unable to deal with disaster without foreign assistance. General health care is below Western standards, due to poor sanitation and quality of nursing staff.

The nursing capabilities are largely Middle Eastern expatriates. The physician and nurse to population ratios are: 1/758 and 1/1315, respectively. The hospitals (government operated) lack basic equipment and supplies. The bed to population ratio is one of highest in region at 1/651. Cultural influences impact upon health care. "They don't share the same attitude toward hygiene and infection control as US/Western trained personnel."[48] Emergency medical services are lacking trained personnel and equipment.

Jordan's support for Desert Shield/Storm was non existent.

Host nation support unlikely. This country doesn't possess the infrastructure to support itself during national emergency. The quality of health care personnel and facilities do not meet US standards.

LEBANON[49]

Lebanon ranks fifth in the region with a population of 3,385,000 of which 45% live in Beirut. Key factors are the density factor of 325/sq. kilometer and country-wide urbanization rate of 80%. At one time Lebanon's infrastructure and living standards were among the highest in the Arab world. However, constant war/conflicts, overcrowding, and poor sanitation account for the overall substandard living condition. The infrastructure (water,

sanitation, waste disposal) is a major problem for the country. The road network throughout the country is poor.

The country has a low standard of health care. Emergency treatment, curative treatment, crisis management and preventive medicine are in a critical state. The hospital bed to patient ratio is 1/359. The private health care sector performs 80% of the health care services. Most of the health care facilities are in the urban areas and are inadequate. All facilities have sustained considerable damage and are in various states of repair. The number of health care providers is insufficient to support the population. The physician and nurse to population ratios are: 1/965 and 1/920, respectively. The quality of physician training in the private sector is very high. Most physicians are trained overseas. The cadre of nurses are in short supply and predominantly expatriates. Shortages of medical supplies and equipment persist. The country depends heavily on outside help/aid. Evacuation is by helicopter, due to terrain and poor road networks.

Lebanon did not support Desert Shield/Storm.

Host nation support is unlikely. They do not have the infrastructure in the medical arena to provide health care to their own population.

OMAN[50]

Oman is one of the least urbanized countries in the region with a rate of 9%. The country's population is 1,534,000. The density ratio is 7 individuals per square kilometer. "Despite significant advances in national wealth (11.7% GNP growth for 1991) during the past 10 years, statistically Oman remains one of the most impoverished countries in the world."[51] Substandard living conditions, poor water supply, waste disposal and poor sanitation, due to a lack of facilities and indiscriminate discarding of refuse, are major national problems.

Overall quality of health care is not to US standards. Personnel shortages outside the major cities and reliance on non-Western trained physicians and nurses exacerbates the problem. Oman has one of the 'lowest' physician to population ratios in the region: 1/1234. The nurse ratio is 1/439. Medical care provided by British trained physicians closely aligns to US standards. The nursing care provided by most expatriates is not of the same quality. Though the bed to population ratio of 1/382 is relatively low, this does not address the access problem. Limited access to health care is due to lack of facilities. Most facilities are in the urban areas and most the population lives in the rural areas. Rural areas are only accessible by helicopter or foot due to poor or few roads and rough terrain. **Hospitals, in general, perform below US standards.** During war or national disaster Oman would rely on US or United Kingdom for medical support.

Oman's support during Desert Shield/Storm was: Unit level medical support of deployed combat unit; a shared 100 beds of Omani Army Hospital near Seeb with US.[52]

No written host nation agreements exist for medical support. As demonstrated during the Persian Gulf War, they were willing to provide medical support on an as needed basis.

SAUDI ARABIA[53]

Saudi Arabia, the largest of the region in land mass, contains a population of 17,870,000 with a growth rate of 4.2%. Due to the vastness of the country the density factor is 8/sq. kilometer with an urbanization rate of 73%. The standard of living is marginal for the masses. Sanitation continues to be a problem; waste disposal ranges from inadequate in most urban areas to non existent in rural areas. Since the 1986 oil market down turn, the growth in GNP has been on the negative side, as cited by the 1991 rate of -2.2%. Potable water is available to 93% of population. This is due largely to desalination systems and deep wells. The road networks of the country are adequate between urban areas.

The health care system is capable of providing limited medical services to 90% of population. "Saudi Arabia ranks as one of the best health care providers in the Middle East. The quality of medical care generally is good, but is affected by the lack of continuity of medical staff attributed to high turnover rate at

most Saudi Arabian medical facilities."[54] The physician and nurse to population ratios are: 1/1164 and 1/509, respectively. Expatriates constitute a major portion of medical staff. They lack loyalty and have difficulty in communication with patients because of culture and language differences. Though the best in the Arab world, its health care is still marginal compared to Western standards. Sanitary conditions and shortage of qualified medical personnel are the major problems. Emergency medical services lack good facilities and trained manpower. Cultural and Islamic beliefs negatively affect Saudi Arabians entering the health care field. In the event of a major disaster or war Saudi Arabia relies heavily on medical assistance from international organizations.

Saudi Arabian support for Desert Shield/Storm was extensive. Besides numerous field hospitals and evacuation assets being made available to Coalition Forces, fixed facilities were shared at Riyadh and Dhahran. Saudi Arabia experienced a major shortage problem with trained medical personnel due to the departure of expatriates. Facilities were made available and staffed by the Multinational Forces medical personnel.

Saudi Arabia is one of the US's strongest allies in the region. Host Nation Support agreements are working. However, as with other countries, Saudi Arabia is reluctant to sign formal pacts. They stand by their friendship and provide resources as needed.

SYRIA[55]

Syria has a population of 12,966,000. It is relatively overcrowded with a density factor of 181 individuals/sq kilometer. Only 50% of the population lives in the urban areas. The low standard of living conditions are caused by economic conditions affecting the region. The growth in GNP of 0.4% in 1991 is one of the lowest in the area. The lack of municipal sewage and water distribution systems are two of the countries major problems. An indifference to or ignorance of sanitation compounds these problems. Water is not a problem, 50-70 % of the population has access to potable water.

"Health care infrastructure is incapable of handling large scale emergency situations."[56] Low quality of hospital care and inadequate number of facilities (bed to population ratio:1/960) are reasons why Syria is incapable of meeting the medical needs of the population. Quality of care is considered fair to poor by US standards due to understaffed and poorly trained providers, especially nurses. The physician and nurse to population ratios are: 1/1592 and 1/1325, respectively. Additionally, physician quality measures from good to poor. Syria is heavily dependent on outside medical support.

Syrian support for Desert Shield/Storm was: unit level medical support of deployed division; one 200 bed field hospital at echelon above division.[57]

Syria is not recommended for Host Nation support due to cultural aspects, attitude toward health care, and inferior state of health care infrastructure.

YEMEN ARAB REPUBLICS[58]

Yemen is one of the least developed countries in the world. The estimated population of 10,067,000 lives primarily in rural areas (25% urbanization rate.) Living conditions are sparse to US standard. Economic constraints limit the health care provided by the government. Water is scarce in the country and waste disposal very poor. The country has a poor road network. Much of the country is unaccessible except by helicopter.

In general, the country is in a low state of medical readiness. The country relies extensively on foreign donor agencies for support. The facilities (beds to population ratio: 1/960) are few and lacking medical supplies and equipment. **Yemen cannot provide medical services for their own armed forces. The quality of health care is poor to primitive by Western standards.** There is an extreme shortage of medical providers. The physician and nurse to population ratios are: 1/5336 and 1/2142, respectively. These are the 'lowest' rates in the region.

Yemen support for Desert Shield/Storm not reported.
Host nation support is not desirable. The country is incapable of providing for its own.

CONCLUSION

Host Nation Support for medical services in the Middle East is a very challenging task. The Islamic religion and the culture of the region have a negative impact on our ability to enter into HNS agreements. Over time we have developed lasting friendships, especially with Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE. But in the past these countries were reluctant to set up formal written agreements because there was no real threat. The need was not there.[59] Desert Shield/Storm may have changed that perception.

The door is opening, none-the-less, we must be cautious in accepting facilities which do not meet US standards. The medical infrastructures (facilities, equipment, personnel, sanitation) of most Middle Eastern countries do not meet Western or US standards. Our requirement to provide quality care to the soldiers further impacts on our decision to enter into agreements.

Host Nation Support in Southwest Asia is not a viable alternative to deploying theater medical facilities. Additionally, medical force structure should not be offset by prepositioning facilities. The personnel required to staff those facilities must be available in the structure. The majority of the nations surveyed are unable to provide quality personnel or facilities to U.S. standards.

RECOMMENDATIONS

Finally, if we profess to honor the direction of our leaders:

> "DEFENSE PLANNING GUIDANCE (Regional Goals and Challenges)
>
> We can help our friends meet their legitimate defense needs with United States foreign military and commercial sales without jeopardizing power balance in the region.
>
> Tailor Security Assistance programs to enable our friends to bear both the burden of defense and facilitate standardization and interoperability of receptive country forces with our own.
>
> Focus these programs to enable our regional friends to modernize their forces, upgrade their defense doctrine and planning, and acquire essential defense capability."[60]

we must be willing to provide aid and assistance in developing the infrastructure or improving existing medical facilities, education, and training of Middle East nations. This can be accomplished though Security Assistance programs, direct foreign aid, or other government programs.

The following questions are posed for future study:

1. To what extent is the United States willing to provide such programs?

2. Is financial support of the programs in the best interest of the United States?

3. How do these programs fit into our national interest?

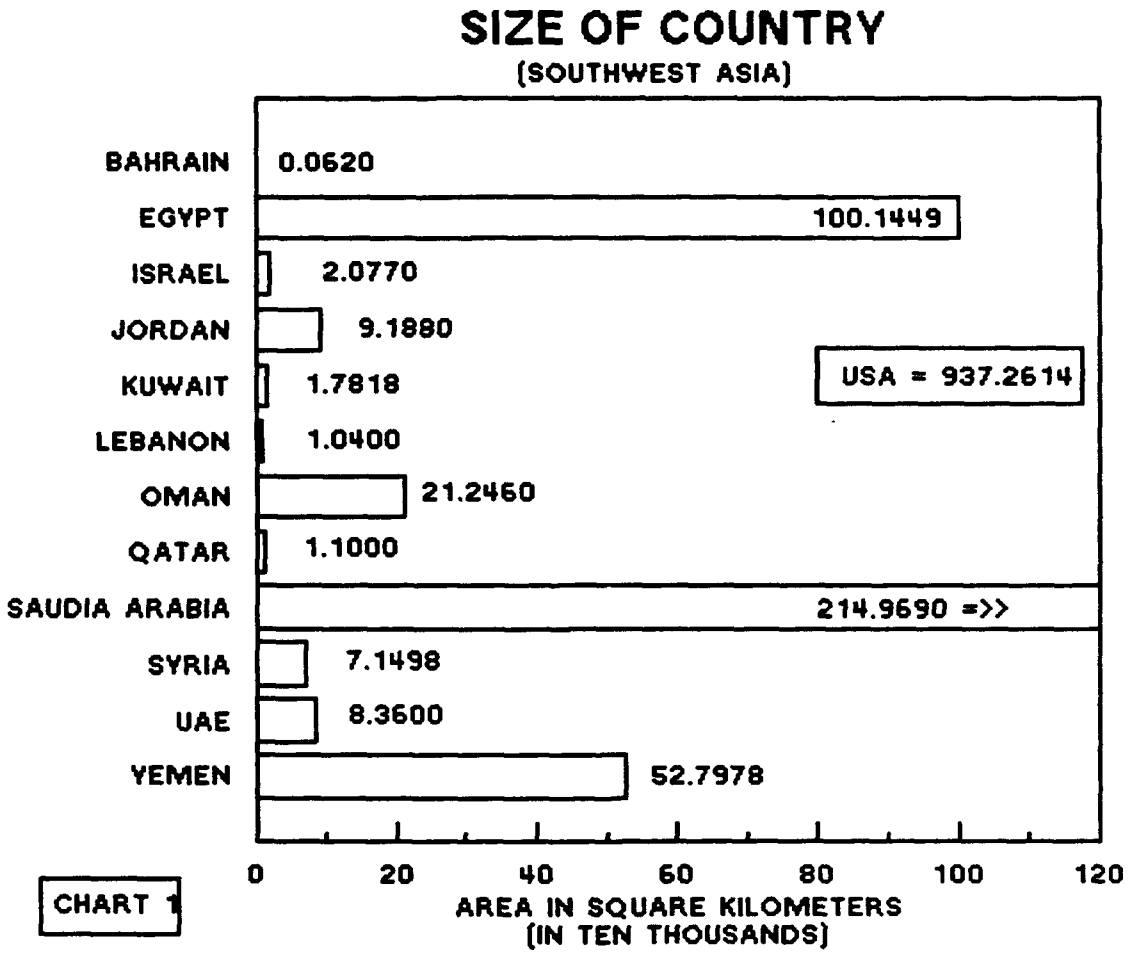

CHART 1

ANNEX A

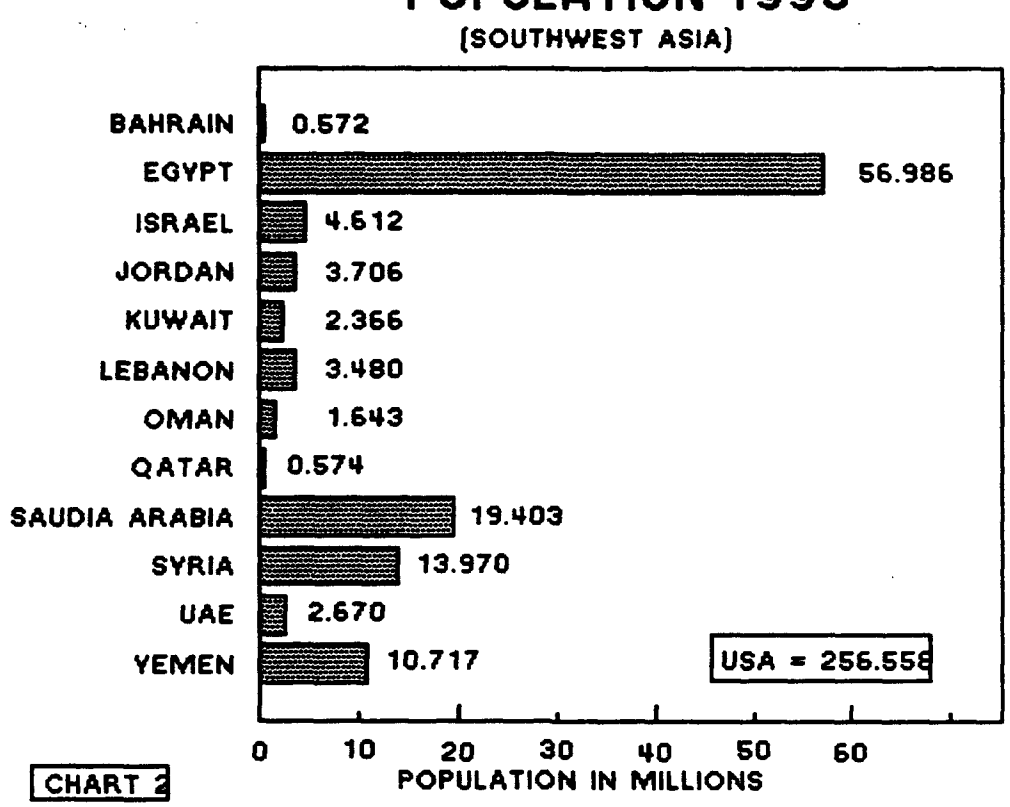

CHART 2

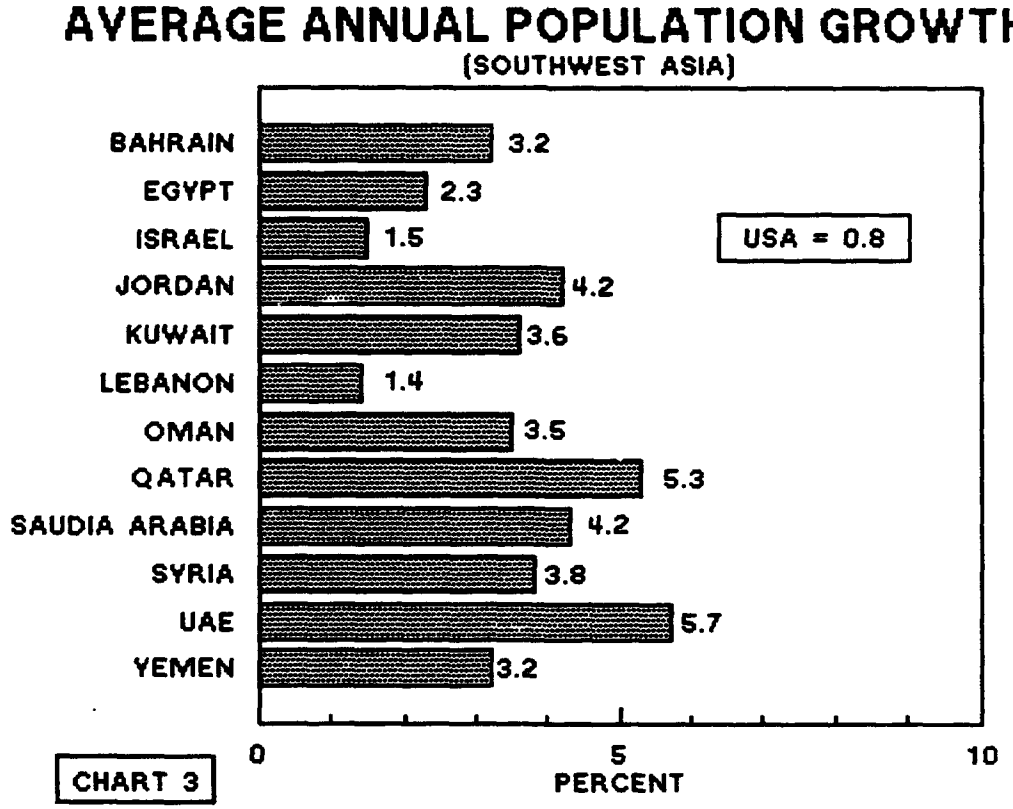

CHART 3

ANNEX B

POPULATION DENSITY

(SOUTHWEST ASIA)

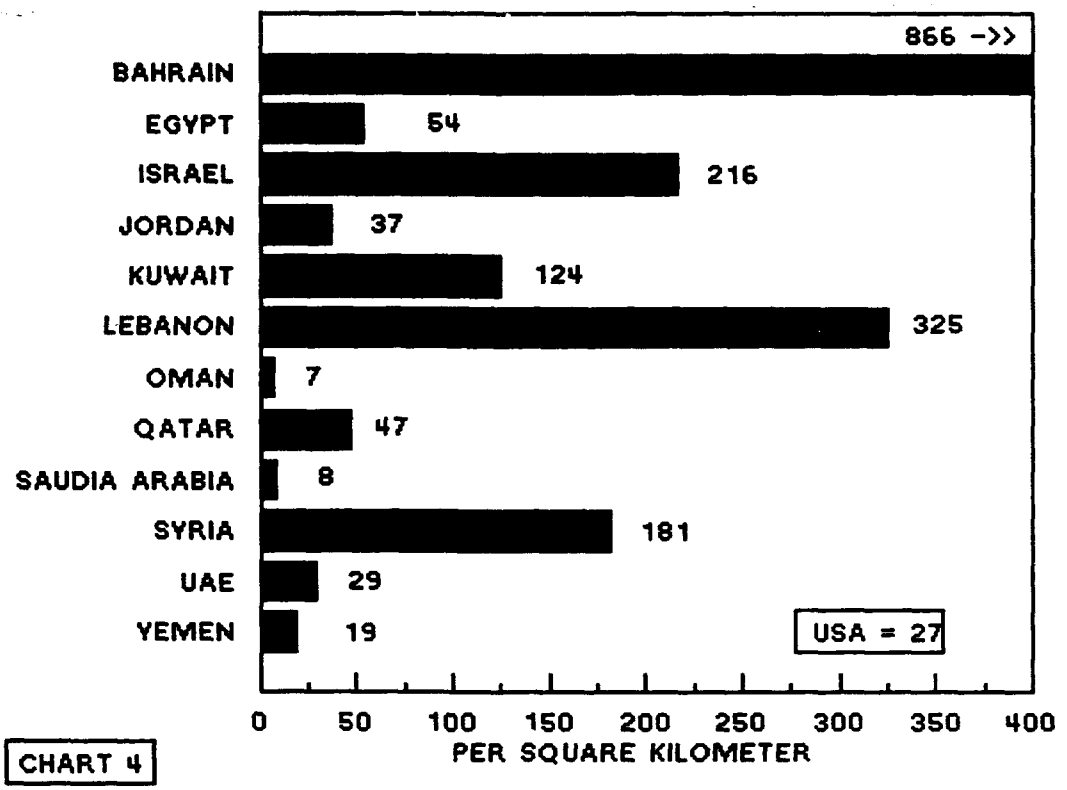

CHART 4

URBANIZATION

(SOUTHWEST ASIA)

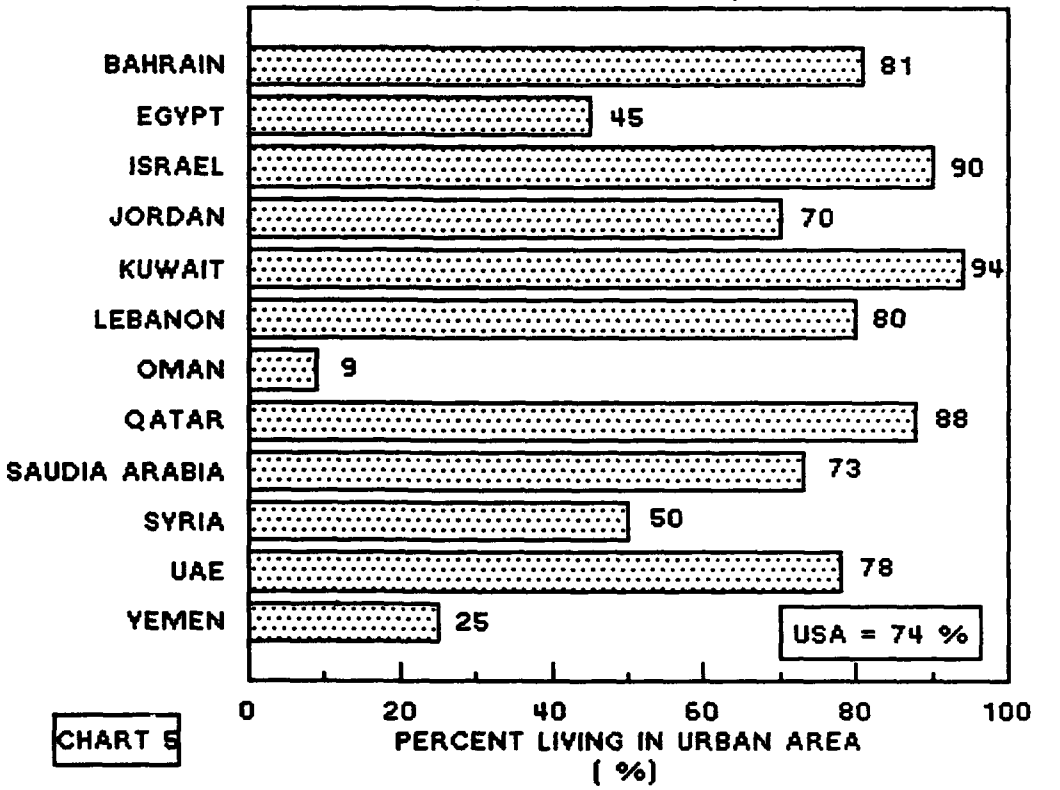

CHART 5

ANNEX C

GROSS NATIONAL PRODUCT

(SOUTHWEST ASIA)

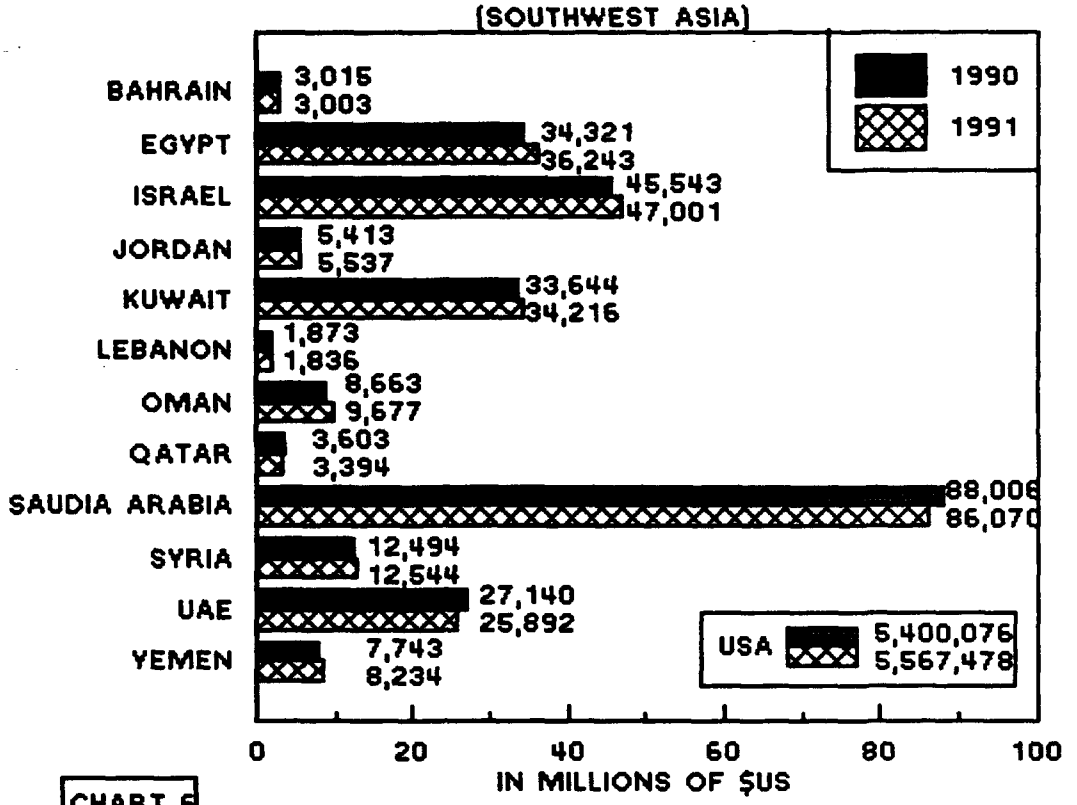

CHART 6

PERCENT GROWTH IN GNP

(SOUTHWEST ASIA)

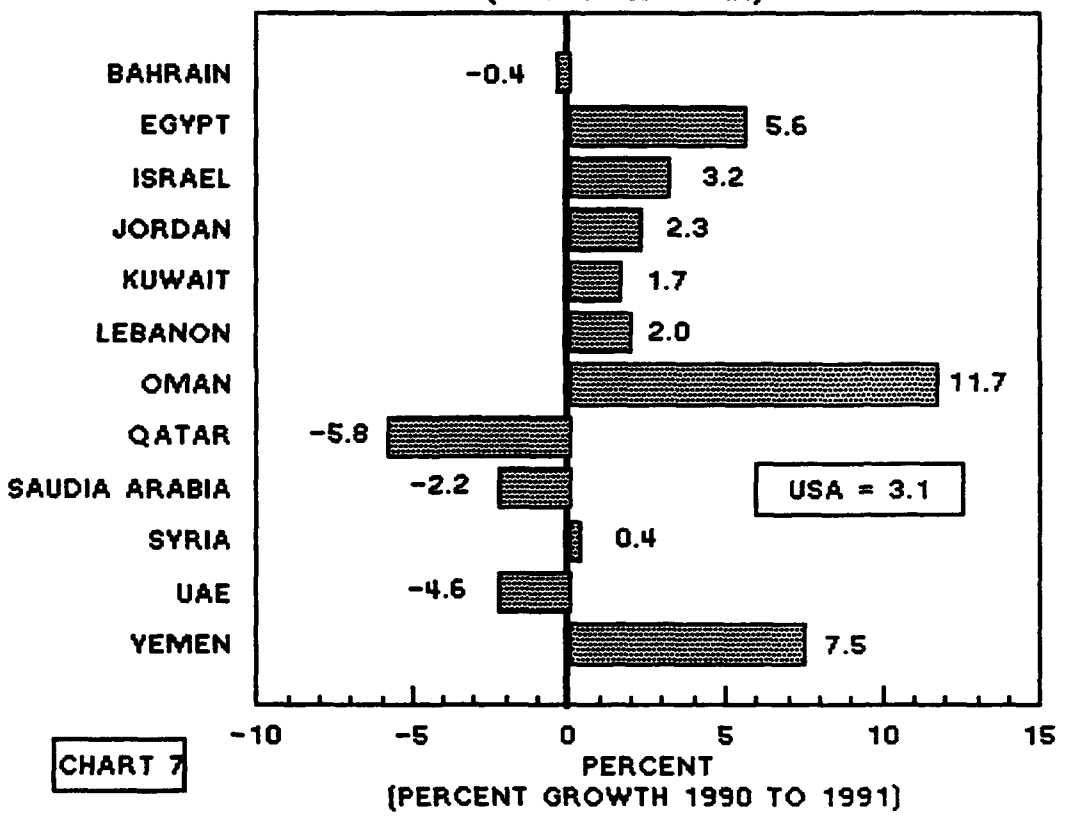

CHART 7

ANNEX D

CRUDE BIRTH RATE

(SOUTHWEST ASIA)

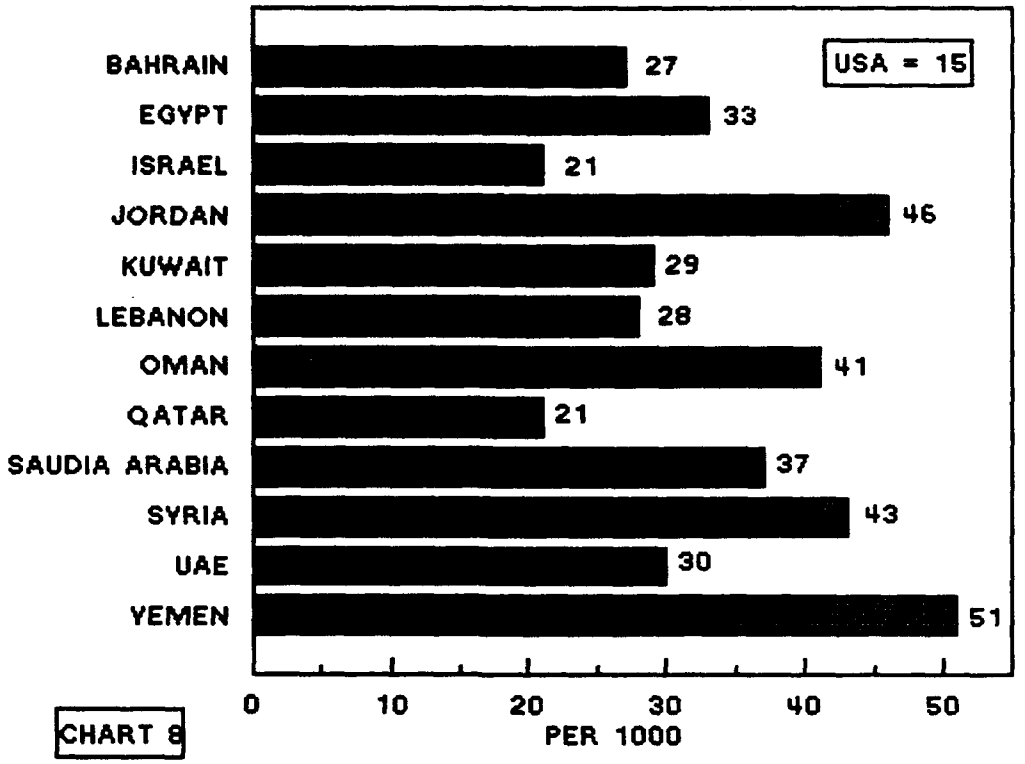

CHART 8

INFANT MORTALITY RATE

(SOUTHWEST ASIA)

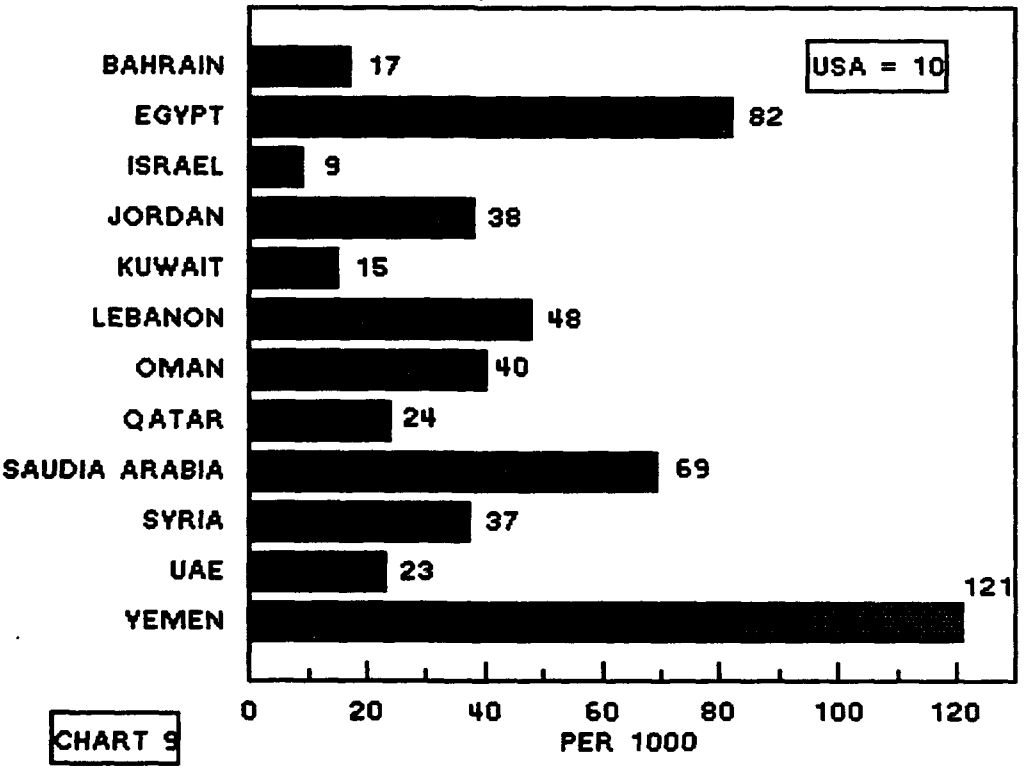

CHART 9

ANNEX E

LIFE EXPECTANCY

(SOUTHWEST ASIA)

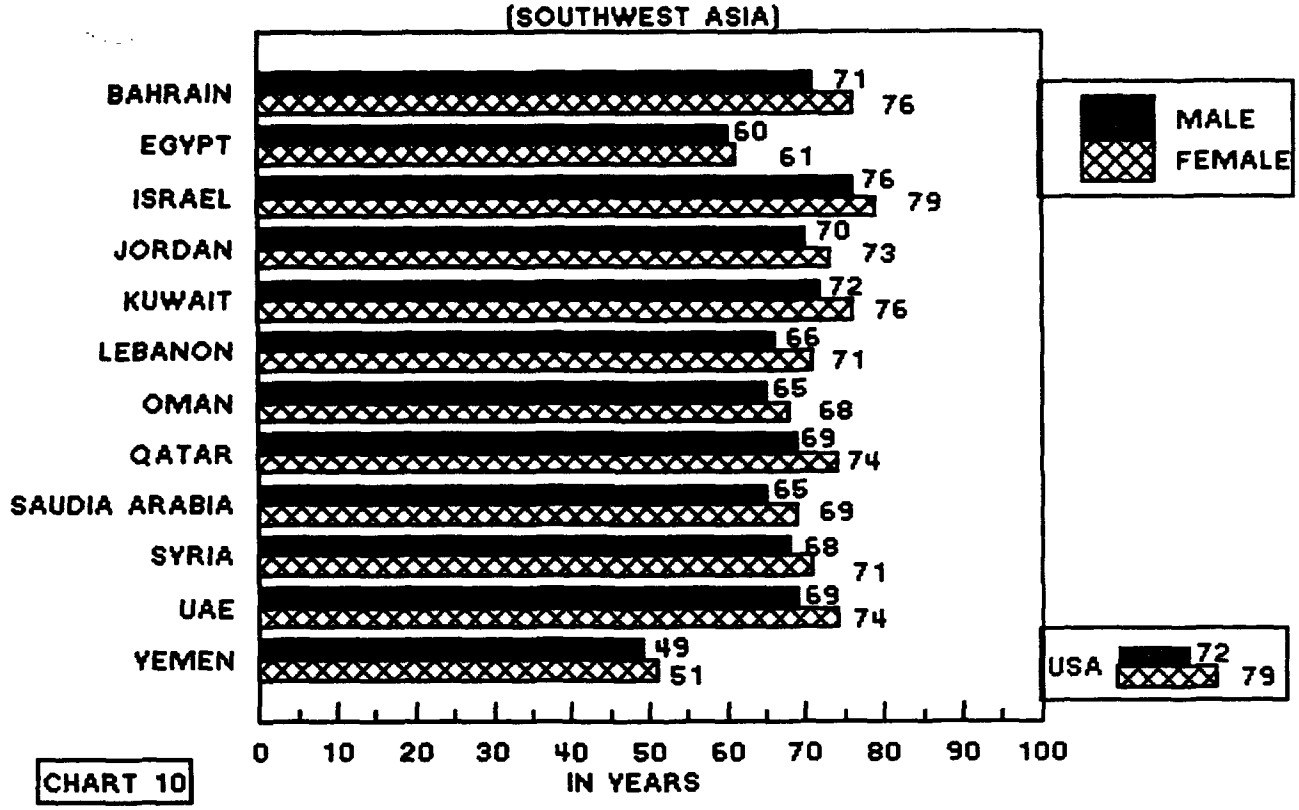

CHART 10

CRUDE DEATH RATE

(SOUTHWEST ASIA)

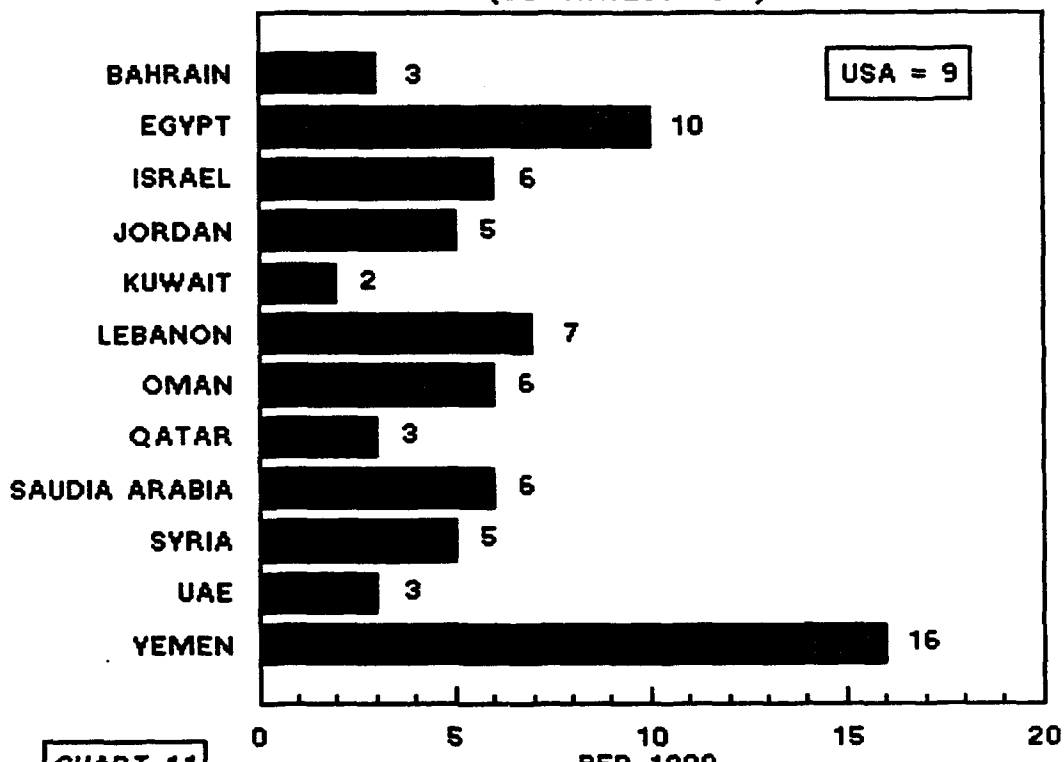

CHART 11

ANNEX F

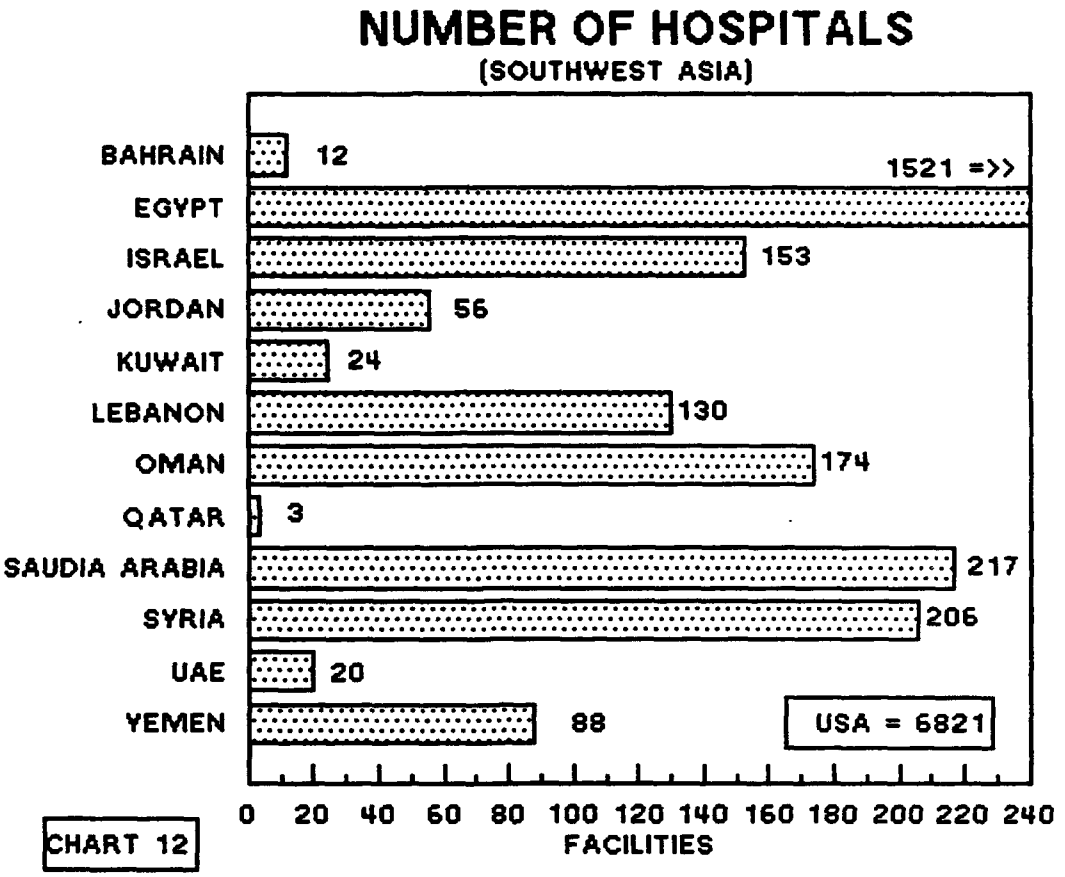

CHART 12

ANNEX G

NUMBER OF BEDS

(SOUTHWEST ASIA)

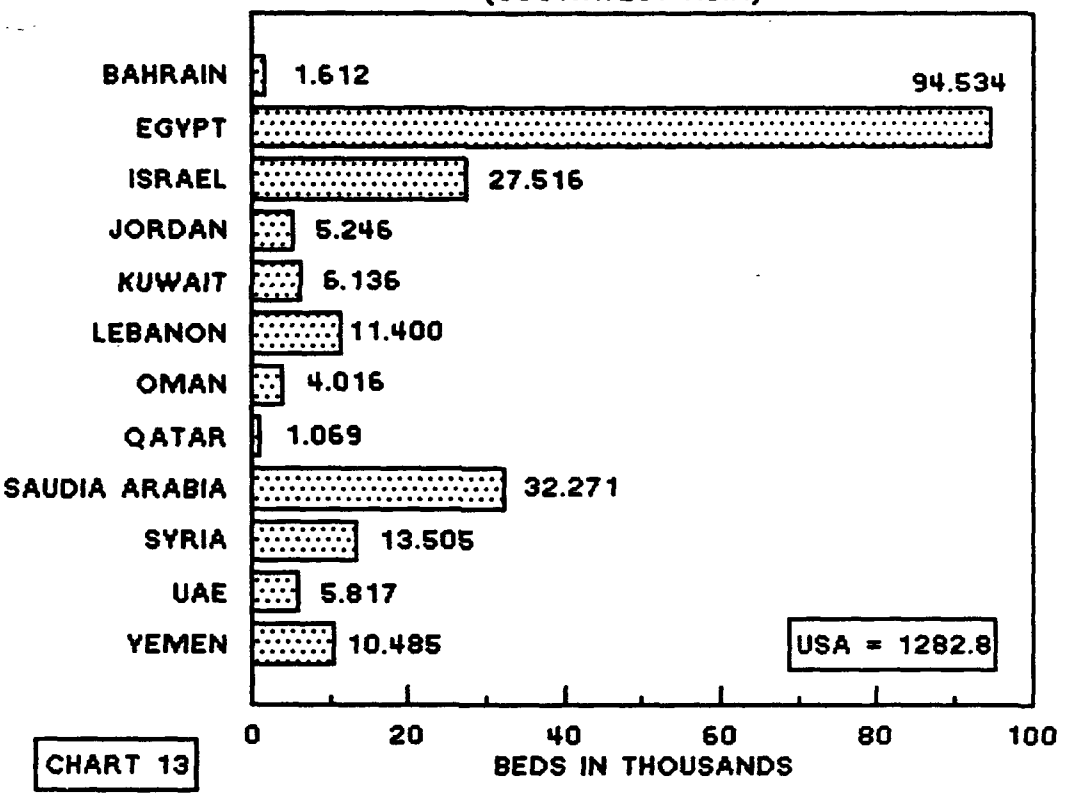

CHART 13

POPULATION PER BED

(SOUTHWEST ASIA)

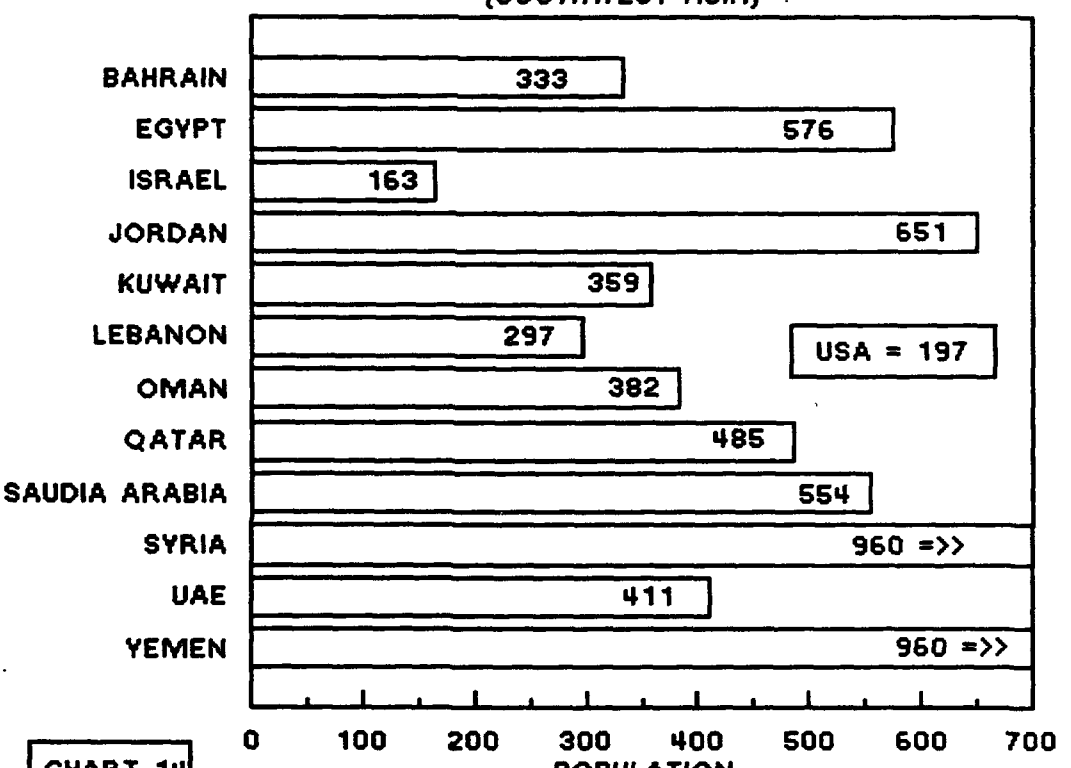

CHART 14

ANNEX H

NUMBER OF PHYSICIANS

(SOUTHWEST ASIA)

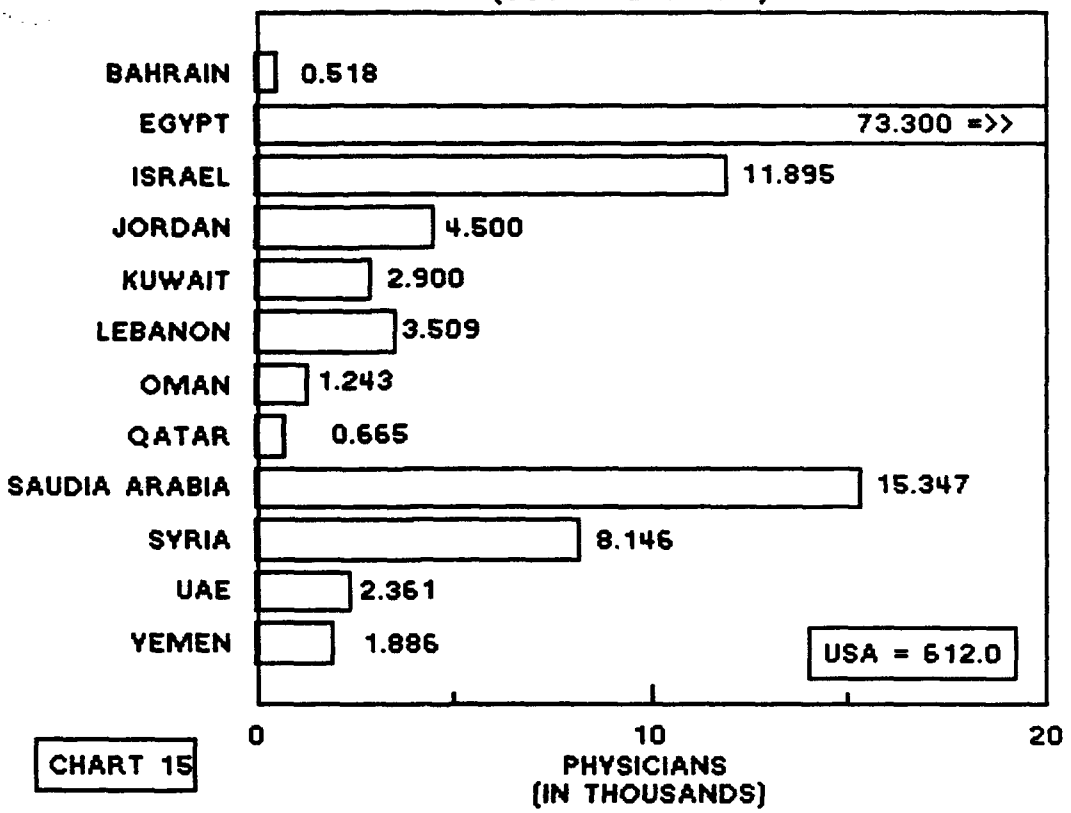

CHART 15

POPULATION PER PHYSICIAN

(SOUTHWEST ASIA)

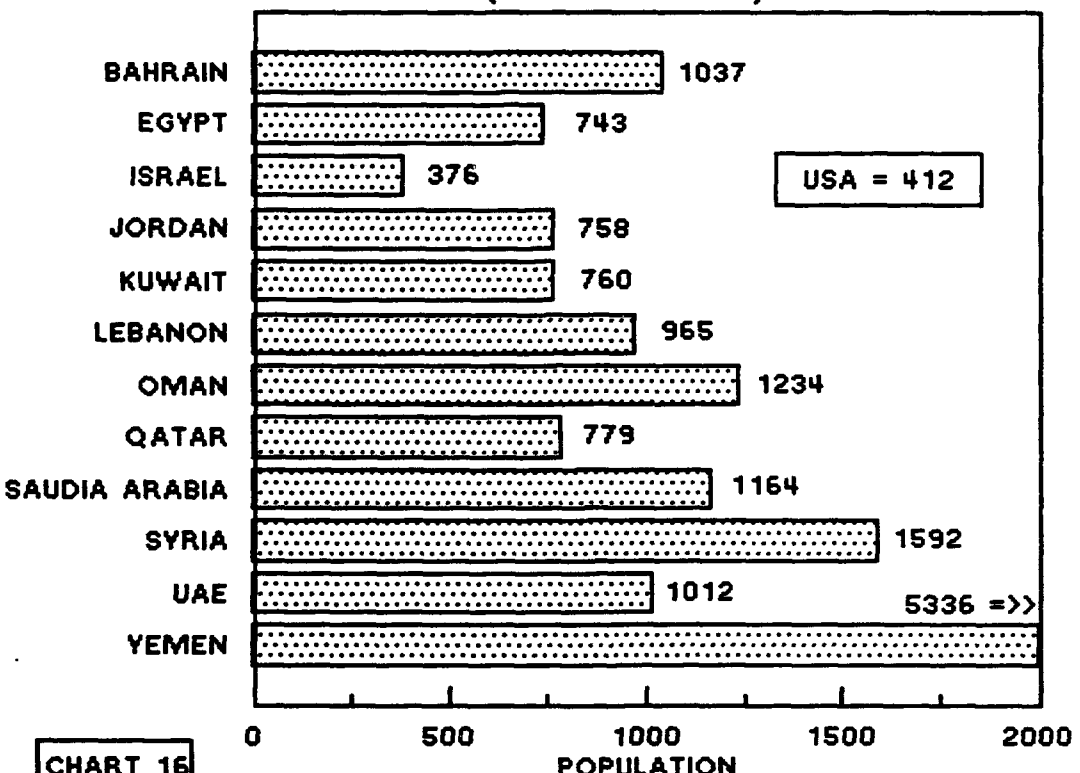

CHART 16

ANNEX I

NUMBER OF NURSES

(SOUTHWEST ASIA)

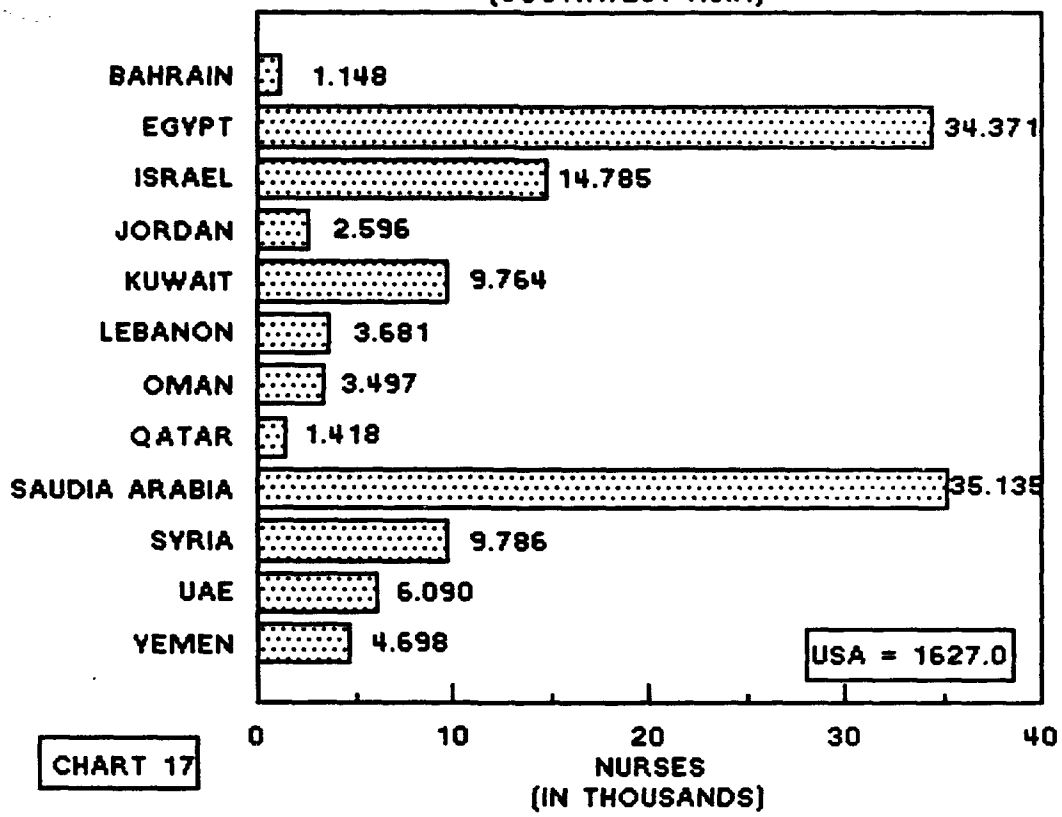

CHART 17

POPULATION PER NURSE

(SOUTHWEST ASIA)

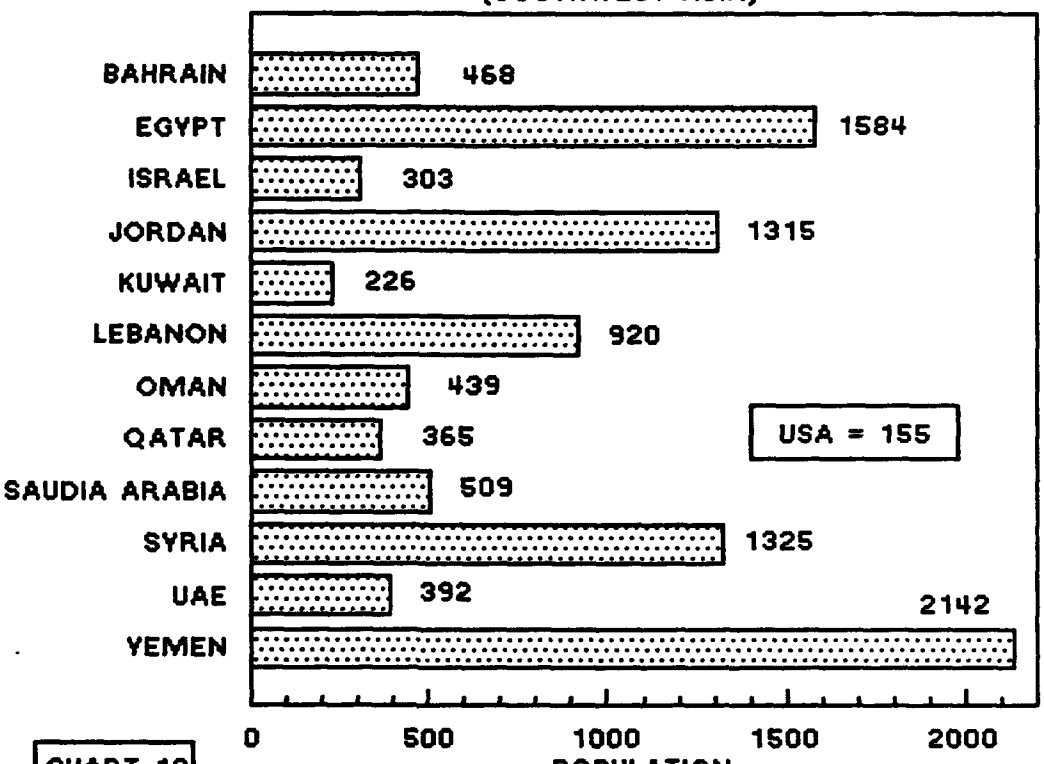

CHART 18

ANNEX J

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